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APPLICATION NO.	--FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/991,476	11/16/2001	G. William Walster	SUN-P7076-SPL	3163

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PARK, VAUGHAN & FLEMING LLP
508 SECOND STREET
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EXAMINER

HIRL, JOSEPH P

ART UNIT	PAPER NUMBER
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2121

DATE MAILED: 02/23/2004

4

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/991,476

Applicant(s)

WALSTER ET AL.

Examiner

Joseph P. Hirl

Art Unit

2121

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-21 are pending in this application.
2. The claims and only the claims form the metes and bounds of the invention.
"Office personnel are to give the claims their broadest reasonable interpretation in light of the supporting disclosure. *In re Morris*, 127 F.3d 1048, 1054-55, 44USPQ2d 1023, 1027-28 (Fed. Cir. 1997). Limitations appearing in the specification but not recited in the claim are not read into the claim. *In re Prater*, 415 F.2d, 1393, 1404-05, 162 USPQ 541, 550-551 (CCPA 1969)" (MPEP p 2100-8, c 2, I 45-48; p 2100-9, c 1, I 1-4). The Examiner has full latitude to interpret each claim in the broadest reasonable sense. Examiner will reference prior art using terminology familiar to one of ordinary skill in the art. Such an approach is broad in concept and can be either explicit or implicit in meaning.
3. Examiner's Opinion: Para 3 above applies. To one of ordinary skill in the art, the optimization processes of claims 1, 3, 4, 7, 8, 10, 11, 13-15, 17, 18 and 21 are generic. Taking the first derivative of a function, setting it to zero, and solving for the variable will yield an optimum value (maybe maximum) as the respective function "levels off" and has a gradient at that point of zero, all of which is well known in the art.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 2, 9 and 16 rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applying term consistency is identified in the specification at p 6, l 1-9 wherein a first term is identified as $g(x)$. The claims refer to the term $g(x')$ which raises the question of term inconsistency and a lack of enablement in the specification.

6. Claims 5, 12 and 19 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Term consistency is applied to each relation $H_{ij}(x) \geq 0$ ($i=1, \dots, n$) over the subbox X and excludes any portion of the subbox X that can be proven to violate these inequalities (specification, p 7, lines 2-4; emphasis added). Claims 5, 12, and 19 refer to inequalities beyond the scope of the specification by claiming any inequality by stating "... excluding any portion of the subbox X that violates an inequality." (emphasis added) The respective claims have expanded the scope of the "exclusion" concept beyond that enabled by the specification.

7. Claims 6, 13 and 20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the

invention. To one of ordinary skill in the art, the Newton method is a root finding algorithm which uses the first few terms of the Taylor series of a function in the vicinity of a suspected root to zero in on the root. The Newton technique is addressed several times in the specification, p 3, l 25,26, and p 23, l 3-17 but is not enabled in the manner specified in claims 6, 13, 20. Further, in the specification at p 23, l 9-14, the specification explicitly cites conditions wherein the Newton method is more efficient than term consistency which indicates that one either uses the Newton method or term consistency but not both as identified in claims 6, 13 and 20.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 3, 4, 7, 8, 10, 11, 13-15, 17, 18 and 21 rejected under 35

U.S.C. 102(e) as being anticipated by Corynen (U. S. Patent Publication 2003/0167265, referred to as **Corynen**).

Claims 1, 8, 15

Corynen anticipates receiving a representation of the function f at the computer system (**Corynen**, para 0004; Examiner's Note (EN): the multi-objective decisions have objective functions), storing, the representation in a memory within the computer system (**Corynen**, para 0116; para 0216), and performing an interval global optimization process to compute guaranteed bounds on a globally minimum value of the function $f(x)$ (**Corynen**, para 0243-0256); wherein performing the interval global optimization process involves, applying term consistency over a subbox x (**Corynen**, para 0287; EN: term consistency is synonymous with the optimization process wherein only values that satisfy the optimization process are retained...term consistency) and excluding any portion of the subbox x that violates term consistency (**Corynen**, para 0287; EN: term consistency is synonymous with the optimization process wherein only values that satisfy the optimization process are retained...term consistency).

Claims 3, 10, 17

Corynen anticipates keeping track of a least upper bound f_bar of the function $f(x)$ (**Corynen**, para 0287; EN: to one of ordinary skill in the art, it is axiomatic that one keeps track of a least upper threshold in the process of determining a minimal optimization); removing from consideration any subbox for which $f(x) > f_bar$ (**Corynen**, para 0295; EN: in the sensitivity analysis, the effect of variables on the optimized value is explored, i.e. identification of those value that will be eliminated as the function is optimized); applying term consistency to the inequality $f(x) \leq f_bar$ over the subbox x (**Corynen**, para 0287; EN: term consistency is synonymous with the optimization

process wherein only values that satisfy the optimization process are retained...term consistency), and excluding any portion of the subbox x that violates the inequality (**Corynen**, para 0287; EN: term consistency is synonymous with the optimization process wherein only values that satisfy the optimization process are retained...term consistency).

Claims 4, 11, 18

Corynen anticipates determining a gradient $g(x)$ of the function $f(x)$. wherein $g(x)$ includes components $g_i(x)$ ($i = 1, \dots, n$) (**Corynen**, Fig. 28; EN: to one of ordinary skill in the art, a gradient of $f(x)$ is the first derivative of $f(x)$ or the slope of the line as shown in Fig. 28); removing from consideration any subbox for which $g(x)$ is bounded away from zero, thereby indicating that the subbox does not include a global minimum of $f(x)$ (**Corynen**, Fig. 28; EN: to one of ordinary skill in the art, setting the first derivative to zero, will identify a minimum ... curve assumed to be similar to that of Fig. 28 and hence those values of $g(x)$ that tend away from zero are excluded...non minimum...); and applying term consistency to each component $g_i(x)=0$ ($i = 1, \dots, n$) of $g(x)=0$ over the subbox x (**Corynen**, para 0287; EN: term consistency is synonymous with the optimization process wherein only values that satisfy the optimization process are retained...term consistency); and excluding any portion of the subbox X that violates a component (**Corynen**, para 0287; EN: term consistency is synonymous with the optimization process wherein only values that satisfy the optimization process are retained...term consistency).

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Claims 7, 14, 21

Corynen anticipates the width of x is less than a first threshold value (**Corynen**, Fig. 28; EN: to one of ordinary skill in the art, such threshold is merely the abscissa corresponding to the optimum solution of Fig. 28); and the magnitude of $f(X)$ is less than a second threshold value (**Corynen**, Fig. 28; EN: to one of ordinary skill in the art, such threshold is nothing more than the ordinate corresponding to the optimum solution of Fig. 28).

Conclusion

10. The prior art of record and not relied upon is considered pertinent to applicant's disclosure.

- DeGreef et al, U.S. Patent 6,078,745
- Willems et al, U.S. Patent Publication 2002/0072956
- Johnson et al, U.S. Patent Publication 2002/0038196
- Kant et al, U. S. Patent 6,173,276

11. Claims 1-21 are cancelled.

Correspondence Information

12. Any inquiry concerning this information or related to the subject disclosure

should be directed to the Examiner, Joseph P. Hirl, whose telephone number is (703) 305-1668. The Examiner can be reached on Monday – Thursday from 6:00 a.m. to 4:30 p.m.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Anil Khatri can be reached at (703) 305-0282.

Any response to this office action should be mailed to:

Commissioner of Patents and Trademarks,
Washington, D. C. 20231;

or faxed to:

(703) 746-7239 (for formal communications intended for entry);

or faxed to:

(703) 746-7290 (for informal or draft communications with notation of "Proposed" or "Draft" for the desk of the Examiner).

Hand-delivered responses should be brought to:

Receptionist, Crystal Park II
2121 Crystal Drive,
Arlington, Virginia.

Joseph P. Hirl



February 19, 2004